



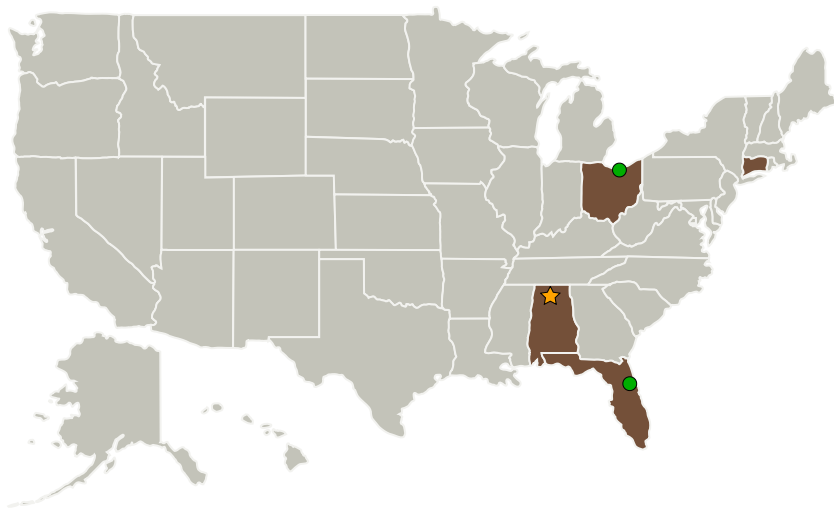
Project Introduction

Advanced Exploration Systems (AES) Life Support Systems project Trace Contaminant and Particulate Control task: Work in the area of trace contamination and particulate control is focused on characterizing commercial off-the-shelf (COTS) adsorbent media for trace contaminant control applications, evaluating carbon monoxide catalyst performance, developing and characterizing selective catalytic ammonia reduction catalysts, and evaluating technical maturity of photo-catalytic oxidation (PCO) processes for trace contaminant control.

Anticipated Benefits

Particles float in the spacecraft environment and can be inhaled by the astronauts. Understanding the types of particles and the sizes provides the information needed to develop filtration designs and identify sources of particles that may influence the design of the source generating those particles. The spacecraft atmosphere contains trace contaminants that filter out with adsorbent materials. Controlling particulates and trace contaminants provides clean air for the astronauts to breathe.

Primary U.S. Work Locations and Key Partners



Advanced Exploration Systems
Life Support Systems

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Life Support Systems: Trace Contaminant and Particulate Control



Active Technology Project (2014 - 2024)

Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
● Glenn Research Center (GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
● Kennedy Space Center (KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
Precision Combustion, Inc.	Supporting Organization	Industry	North Haven, Connecticut

Organizational Responsibility

Responsible Mission Directorate:

Exploration Systems Development Mission Directorate (ESDMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Exploration Capabilities

Project Management

Program Director:

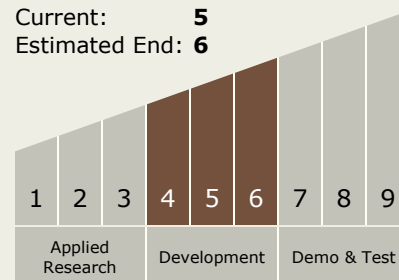
Christopher L Moore

Project Manager:

Walter F Schneider

Technology Maturity (TRL)

Start: 4
 Current: 5
 Estimated End: 6



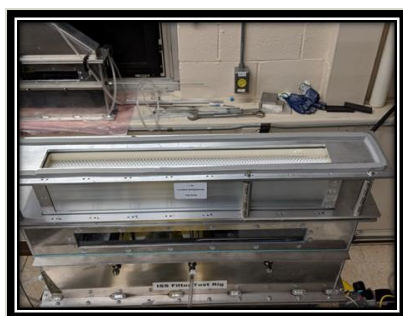
Primary U.S. Work Locations

Alabama	Connecticut
Florida	Ohio

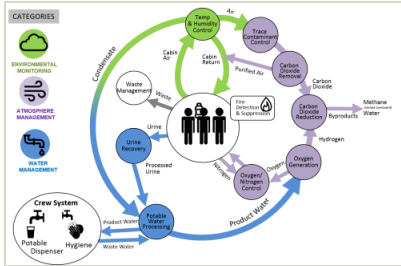
Images

**Advanced Exploration Systems Life Support Systems**

Advanced Exploration Systems Life Support Systems
<https://techport.nasa.gov/image/143419>

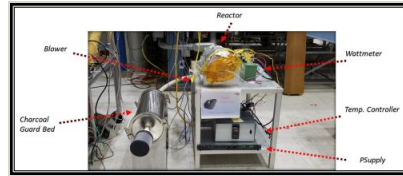
**Bacteria Filter Element with Scrolling Filter Media**

Bacteria Filter Element with Scrolling Filter Media
<https://techport.nasa.gov/image/143422>



ECLSS Loop Closure Cycle

ECLSS Loop Closure Cycle
(<https://techport.nasa.gov/image/143418>)



Trace Contaminant Control Catalytic Oxidizer Assembly Life Test Stand

Trace Contaminant Control
Catalytic Oxidizer Assembly Life
Test Stand
(<https://techport.nasa.gov/image/143421>)

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
 - └ TX06.1.1 Atmosphere Revitalization

Target Destinations

The Moon, Mars, Others Inside the Solar System

Supported Mission Type

Projected Mission (Pull)